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DESCRIPTIONS OF A FEW LEAF-EATING COLEOPTEROUS LARVÆ.

BY D. W. COQUILLETT, WOODSTOCK, ILL.

The following larvæ (with the exception of the one first described) have the usual *Chrysomelid* form of which the well-known Colorado Potato Beetle may be taken as a type. In *Chrysomela pallida*, Say, the body is more elongate, approaching the *Coccinellidæ* somewhat in form. With the exception of *Lema collaris*, Say, which forms a sort of cocoon among the leaves, they all enter the earth to pupate. A few of the following larvæ have been described by various authors, and are introduced here merely for comparison.

CHRYSOMELA PALLIDA, Say. Body black, elongated, much wrinkled and roughened; the sutures of the segments and the venter sometimes tinged with brown; head and cervical shield polished black; length 8 mm. Lives in communities on poplar. Several of these larvæ entered the earth to pupate June 1st, and the beetles issued about June 19th. (Determination of Dr. Horn.)

CHRYSOMELA CLIVICOLLIS, Kirby. Body pale, flesh-colored, on each side of the body is one row of 8 black dots; cervical shield dark brown; head a little lighter than the body, marked on each side with two black dots; length 11 mm. Lives on *Asclepias*. Several which I found on *Asclepias Sullivantii* July 19th, entered the earth July 23, and the beetles appeared about August 9; another specimen issued from the pupa July 25. Two were taken *in coitu* June 19; the male was the smallest and darkest, and had only one black spot at the tip of each elytron, while in the female this was divided into two spots.

DORYPHORA 10-LINEATA, Say. Body dark pinkish or yellowish flesh; on each side of the body are three rows of black dots, the upper row not extending upon segments two and three; the dots in the lowest row are

much smaller than those in the other rows; cervical shield color of body, bordered behind with black; head black; length 10 mm.

DORYPHORA JUNCTA, Germar. Body pale, yellowish flesh color; on each side of the body is one row of eleven black dots; cervical shield dusky, broadly edged all around with black; head pale; length 10 mm. Feeds on *Solanum Carolinense*. (From Riley in Amer. Ent. vol 1, p. 43.)

CHRYSOMELA MULTIGULTIS, Stal. Body dull white; a dark colored dorsal line on which is a row of brown spots; on each side of the body are two rows of brown spots; head yellowish brown, marked with a black spot on each side; length 10 mm. Feeds on Hazel. Found several July 4th; these were bred to the perfect state, but I neglected to note the date when the beetles issued. I have taken the beetles *in coitu* June 13th. (Determination of Mr. E. P. Austin.)

CHRYSOMELA BIGSBYANA, Kirby. Body white, tinged with yellow; spiracles black with a white dot in the centre of each; on each side of segments 2 and 3 is a curved black dash, the curve downwards; cervical shield concolorous, marked with a blackish spot in the middle of each outer edge; head yellowish brown, occelli black, in two clusters; length 10 mm. Feeds on Willow. Found two August 13; these pupated shortly afterward, and the beetles issued Sept. 5th. (Determination of Dr. Horn.)

CHRYSOMELA SIMILIS, Rogers. Body whitish, mottled with green and yellow; spiracles brown or black; head pale yellowish brown, ocelli black; length 7 mm. Lives on *Ambrosia artemisiaefolia* and *Bidens frondosa*. Found June 12, July 21, and August 22; those taken July 21 pupated July 31, and the beetles issued August 5. I have seen the beetles *in coitu* July 22nd and August 2. (Determination of Mr. E. P. Austin.)

LEMA COLLARIS, Say. Body pale yellowish white; spiracles brown; cervical shield brownish black, or marked with blackish; head black, clypeus sometimes tinged with yellow; length 5 mm. Lives on Thistle (*Cirsium lanceolatum*), and feeds mostly on the under side of the leaf, sometimes burrowing between the upper and lower cuticle, always leaving the former untouched. When fully grown they spin an irregular cocoon which somewhat resembles the frothy mass of a spittle-insect, the outside being in small, irregular, oblong pieces, somewhat resembling

small Microgaster cocoons. Several which I found on the 8th of July constructed their cocoons July 12th and the perfect insects issued about July 25. (Determination of Dr. Horn.)

NEW SPECIES AND NOTES ON STRUCTURE OF MOTHS AND GENERA.

BY A. R. GROTE, A. M.

(Continued from Vol. xv., Page 13.)

CATOCALA COELEBS Gr.

The fore wings are *black* with a grayish white subterminal shade. A strongly marked variety of *Badia* with the fore wings *brown*, was mistaken for *Coelebs* by Mr. Strecker, and was the occasion of its reference to *Badia*. But a sight of many specimens leads me to believe that the true *C. Coelebs*, with black fore wings, grades into *Badia*, and is only to be regarded as a variety of it. But this could not have been predicated of the type. The two extremes are exceedingly distinct and different looking.

EXENTERELLA Grote.

I propose this generic term for *Exentera* Gr., preoccupied in Insecta. Now that we have Mr. Scudder's work on genera, there will be more certainty about generic names. I notice that *Rhododipsa* is not included in Mr. Scudder's list. In speaking of the omissions in my review of it, I did not intend that any idea of purposed favoritism should be conveyed by my words. I merely regretted that some authors should have been so fully and others so sparingly represented. Had the proof of my paper been sent to me, I think I should have changed the wording to a simple expression of this regret.

HEMILEUCA Walk.

Since examining the species carefully, as far as they are accessible, the following modification of my arrangement in the "New Check List," p. 20, is proposed:

Genus HEMILEUCA Walk.

Type: *Bombyx Maia* Drury.

§ *Eucronia* Pack.

Maia *Drury.*

Var. Nevadensis *Stretch.*

Grotei *Hopffer.*

Juno *Pack.*——

Diana *Pack.*——

§ *Euleucophaeus* Pack.

Yavapai *Neum.*

Tricolor *Pack.*

Sororius *Hy. Edw.*——

Genus ARGYRAUGES Gr.

Type: *Euleuc. Neumoegeni* Hy. Edw.

Neumoegeni *Hy. Edw.*

In the foregoing list the sign —— indicates that I have not examined the species.

TORNOS EUPETHECIARIA, n. s.

Male and female. Very small, light, whitish gray. Male antennæ pectinate; female simple. Faint discal mark on primaries, which have a subterminal shade line and traces of others, very faint. Secondaries whitish, marked on internal margin, with fine black terminal line and white fringe. Beneath whitish with faint discal mark on primaries. *Expanse,* male, 17 mil.; female, 16 mil. The female is more gray and fainter marked. Arizona.

TORNOS PYGMEOLARIA.

Male and female. Blackish gray; lines and dots almost imperceptible. Hind wings fuscous with white fringes. Beneath pale with faint discal dots on both wings. The female has the disk of secondaries paler and the discal dots on both wings more evident. Arizona. *Expanse,* male 18 mil., female 19 mil.

These small Geometrids may be known from their inconspicuous markings, and by the pectinate male antennæ may be separated from small *Eupethecia*, which they resemble. I have taken *Tornos* in Alabama; the abdomen is curled up over the thorax in repose. *T. Escaria,* female, expands 30 mil., and another female 28 mil.; the male 26 mil. Several

specimens of *T. Interruptaria*, female, expand from 26 to 30 mil. *T. Ochrofuscaria*, female, expands 25 mil. Besides these, a number of specimens in Mr. Neumoegen's collection seem intermediate between *T. Escaria* and *T. Pygmeolaria*, but I hesitate at present to describe them.

TETRACIS VIDULARIA, Grote.

Two female specimens in Mr. Neumoegen's collection are more brown speckled about apical region and smaller than the two typical female individuals. The male has not yet appeared in collections. This is congeneric with *Coloradaria*.

THAMNONOMA PERPALLIDARIA Grote.

A second male from Arizona is of a more reddish, deeper color than my type from New Mexico. The species may be known by the feathered antennæ and the two ochre brown straight lines on primaries arising from blackish costal dots and the fragmentary s. t. line, inclining inwards.

AZENIA EDENTATA, n. s.

Male. The infra-clypeal plate prominent. Above it a broad, frontal, projected plate, the outer edge of which is roundedly scalloped instead of forming three sharp teeth as in *A. Implora*. As my type of *Implora* is a female, I thought at first I had to do with a secondary sexual character which on other grounds seems improbable. The thick labial palpi lie obliquely along the face, hardly exceeding the clypeal projection. Fore wings dark yellow. There seems to be no marks but a small costal dot; fringe concolorous. Hind wings fuscous. Beneath yellowish; fore wings shaded and with a fuscous subterminal band. Thorax and head dark yellow; abdomen pale. Size small like its congener. Arizona. Coll. B. Neumoegen, Esq.

ONCOCNEMIS PERNOTATA, n. s.

Allied to *Saundersiana;* base of primaries washed with light gray; t. a. line double, even, dark brown, slightly curved. Orbicular and reniform subequal, completely defined, gray, with central mark; claviform solid, black. T. p. line double, a little uneven, running inwardly and nearing t. a. line on internal margin. S. t. line wanting. Veins marked with black terminally. Median and subterminal fields washed with light gray; terminally the wing is brownish. Collar light yellowish gray; head darker. Fore tibiæ armed with a claw. Eyes naked. Hind wings with

broad diffuse blackish border and white interlined fringe. Beneath slightly yellowish with broad borders to both wings. A dot and fragmentary inner mesial line on hind wings. Thorax gray; abdomen yellowish gray. Arizona. Coll. B. Neumoegen, Esq. Distantly resembles the European *Campicola;* very distinct from any species described by me.

AGROTIS CITRICOLOR, Grote.

Agrees with types of *Citricolor*, but the markings are distin t; the colors are pale yellow, somewhat ochrey on the thorax, and the terminal space is fuscous, the fringes a little reddish or brownish. Median lines faint, pale fuscous, the t. a. single, very faint, the t. p. apparently single, denticulate. Orbicular hardly noticeable; reniform moderate, pale blackish or fuscous; s. t. line pale; terminal space narrow, blackish or fuscous; fringes whitish or tinged with brownish. Hind wings pure white. Beneath white; costæ yellowish; faint traces of spots and lines. Oak Creek Canon, Colorado; Coll. J. Doll. In Coll. B. Neumoegen, Esq.

Is apparently not different from *Citricolor*, but the terminal space is not "brownish," but fuscous, without any warm tint, and the lines are distinct. The species is somewhat variable, I take it, in the amount of markings expressed, and there is no room for the erection of a second yellow *Agrotis* at the expense of *Citricolor*. It has a frontal tubercle and I refer the moth to *Carneades*, it being congeneric with *C. moerens*.

AGROTIS MUSCOSA, n. s.

Female. Form rather stout. Fore wings of an even smooth gray with an ochre tinge. Markings obsolete. Median shade distinct ochre brownish. Stigmata concolorous; reniform with a blackish inferior stain. Lines double, marked on costa by small black dots. Abdomen whitish, marked with ochre-brown at tip. Collar and thorax tinged with ochre-brown. This species must not be confounded with any of the forms of *Auxiliaris*, which it approaches somewhat; it is not so large, and appears stouter, with a resemblance to the *Lubricans* group. Oak Creek Canon, Colorado, J. Doll legit. In Coll. B. Neumoegen, Esq.

PLUSIA EGENA Guen.

This species must be added to our fauna. Mr. Neumoegen and Mr. Hy. Edwards have received it from Indian River, Florida. Gueneé describes it from Brazil. Our specimens are hardly "d'un carné rosé," so far as the ground color is concerned, but pale rosy brown. Some of our Plusias are widely distributed; according to Berg *P. Biloba* is found also in Chili.

TETRACIS SIMPLICIARIA, n. s.

Size rather small for this genus. Fore wings pale reddish ochrey, entirely evenly colored, crossed by two median pale yellow lines, inner a little curved, outer slightly bent. Costal edge yellow with faint speckles. No darker marginal line. A minute discal dot. Hind wings whitish with a broad vague outer yellowish shading, fringes paler; no marginal line or any marks on internal margin. Male antennæ slightly pectinate. Thorax like fore wings; these latter beneath reflect markings of upper surface. Apices pointed, below them the margin is incurved to vein 4, where the external angle is well produced. *Expanse* 30–31 mil. Arizona, J. Doll. New Mexico, Prof. Snow.

CHESIAS FRONDARIA Grote.

Too late to make the correction in print, I found that this was our first discovered species belonging to this genus; our species is larger and its resemblance to the European did not strike me. The genus is not found either in California or the East. The fauna of Arizona and New Mexico contains representatives of European genera not found elsewhere. Dr. Packark's *Chesias Occidentaliata* was wrongly determined generically, and the moth proves to be *Eupethecia Subapicata* of Gueneé.

FIDONIA ALTERNARIA, n. s.

♂. Orange brown above; the primaries crossed by three fuscous bands; the inner continuous over the cell at about middle of wing; the two outer broader, brought into relief on costa by the whitish yellow ground color which there obtains between them. Hind wings with a very indistinct basal line continuous with inner line of primaries; a narrow line continuous with second line; a broad band continuous with third line and a marginal series of brown marks. Beneath fore wings orange with the three bands distinctly repeated; margin brown; ante-marginal space and costal region at apex white. Hind wings white with three broad brown bands and terminal brown marks; the ground color distinctly and almost equally broadly obtains between the bands. *Expanse* 22 mil. New Mexico. No. 1,024.

This is allied to *Stalachtaria*, but differs by the equal alternating white and brown bands of under surface of secondaries, the continuous line of fore wings above over middle of wing and the less deeply marked and more separate outer bands.

FERALIA JOCOSA Guen.

♀. Not until now have I seen the female. The narrowed, naked, lashed, compound eyes distinguish this from *Momophana Comstocki*. It is not possible to consider *Momophana* and *Feralia* identical. The larger eyes, smoother vestiture, less retracted head and broader clypeus sufficiently distinguish *Momophana*. As to *Comstocki*, I was wrong to suggest that Guenée's var. of *Jocosa* was probably *Comstocki*. I did not know then the variability of *Jocosa*. I have sufficiently explained that *Diphthera* is a Hubnerian name proposed originally in the same sense as *Moma* has been used. I have restricted *Moma* to *M. Astur* Hubn. Verz., and restored its original signifieance to *Diphthera*, where it embraces *D. Fallax* H.-S.

Antennæ simple. Beneath tinted with green. Hind wings with mesial black lines including a black lunate discal spot; a subterminal blackish shade on costal region. The rough vestiture, sunken head, short palpi distinguish *Feralia*.

A specimen from Mrs. Fernald, defective and faded, leads me to suspect a second species. *M. Comstocki* seems very rare, and I cannot again go over the characters from fresh specimens; but the genus is valid unless we consider it as a group of *Diphthera* (in sensu mihi), which I am not as yet prepared to do.

MAMESTRA SPICULOSA, n. s.

Allied to *Cinnabarina* and *Herbimacula*. Fore wings light brown, with the median vein, the t. p. line and stigmata finely marked in white. Cell shaded with black; a black spot below median vein on median space. A pale greenish shade on internal margin subterminally; outer edge dark, cut by the fine pale irregular s. t. line. T. p. line angulate opposite cell. Orbicular oblique, small, a white ring with dark centre; reniform very narrow, upright. Hind wings white. Body brown. Two specimens. *Expanse* 25 mil. Arizona. Coll. B. Neumoegen, Esq.

HOMOHADENA INCONSTANS, n. s.

♂ ♀. An obscure fuscous gray species with naked, lashed eyes; third palpal joint small; female ovipositor visible. Size and appearance of *Induta*, but with the look of an *Agrotis* belonging to the *Sileus* or *Lagena* group. Transverse lines all lost; stigmata wanting. In the female the veins are marked with black, the median vein most decidedly so. In the male there are no marks. The head is smoky and the collar paler. Hind

wings fuscous, paler at base and paler in the male; the veins soiled. Beneath pale and without markings; there is a faint indication of a common line which appears dotted on hind wings of male. Arizona. Three specimens. Coll. B. Neumoegen, Esq.

HOMOHADENA VULNEREA, n. s.

♀. Eyes naked, lashed. Tibiæ unarmed. Fore wings light brown. T. a. line obsolete; t. p. line black, single, well removed outwardly; three black median costal dots. A black dash at base below median vein. Stigmata very small, inconspicuous, pale; a black dash on cell on each side of the orbicular. Veins finely black at extremity, else tending to be pale. Fringes checkered. Thorax like fore wings. Hind wings pure white. Beneath with only a common dotted exterior line. Arizona. Coll. B. Neumoegen, Esq. Two specimens.

This species is very simply marked. The eyes are plainly lashed, but in the type of the genus, *H. badistriga*, after renewed examination, I am not certain that they are, though I incline to regard them lashed.

MAMESTRA FERREALIS, n. s.

Allied to *Mamestra Cinnabarina*, var. *Ferrea*, but larger. Bright brown. Orbicular circular, bright brown, with central dot. Reniform upright, very slightly medially constricted, with a central line hooked into two dots. T. p. line double, black, with white included shade. Subterminal space washed with whitish, leaving a brown patch at costa. Terminal space narrow, brown at apex, afterwards blackish. Subterminal line whitish, preceded by a narrow brown shading. A blackish shade between the stigmata on cell. A blackish shade on costa over sub-basal space. Basal half-line white. A broad shade submedially across median space, deepening before t. p. line, where it is cut by the brown median shade. Hind wings fuscous, with extra-mesial line. Beneath primaries purply brown with a black costal shade outside of the common extra-mesial line. Thorax rather pale, collar and tegulæ with black lines. Abdomen tufted, reddish fuscous, somewhat brighter beneath. Montana. Mr. H. K. Morrison.

Expanse of Noctuidæ.

The following measurements have been omitted in my late descriptions:

Fota armata, 32 mil.

" *minorata*, 24 mil.

Fotella notalis, 28 mil.

Oxycnemis advena, 21 mil.

HEPIALUS FURCATUS.

Dark sable brown. A broad submarginal band furcate below apices and continued irregularly along internal margin, paler than the rest of the wing, variable in width, edged with dark, almost black scales, and with a blackish marginal submedian shade spot. Two or three pale marks on costa within the short inner branch of the band, which is not interrupted, and, the fringes of secondaries being checkered, divides this form from Dr. Packard's *Labradoriensis*, unknown to me. Fringe of both wings checkered with pale. Hind wings uniform pale sable brown with two marks on costa, which may indicate transverse bands. Body dark sable brown. Size of *H. Gracilis*, but much darker. Four specimens agree very nearly. On primaries, the external margin and the middle of the wing are more distinctly warm brown, and on the disc are traces of an incomplete inner transverse band. One specimen (a ♀ ?) is a little larger with the subterminal band very wide. Beneath the subterminal band is partly reflected. Mr. Hill. Adirondacks.

MEGACHYTA INCONSPICUALIS, n. s.

A little smaller than *Deceptricalis* and darker. Fuscous gray shaded outwardly with blackish. Inner line single, uneven, arising from a hardly accentuated black costal mark. Outer line denticulate, merely rather gradually widening to costa. S. t. line upright, pale, very fine; a discal dot. Hind wings like primaries with two extra mesial pale-shaded lines, the inner indistinct, the outer with the following pale shade more apparent at anal angle, as in its ally. This species is smaller and darker than *Deceptricalis*, with the median lines hardly accentuated on costa, especially is this latter character true of the inner line, which is more irregular. Two specimens. Mr. Hill. Adirondacks.

ARSILONCHE HENRICI.

I have again examined four specimens of *Albovenosa*. We have the species united by Mr. Morrison solely on Dr. Staudinger's authority, and that Dr. Staudinger is not difficult in such matters is shown by his reference of our *Graptæ* as varieties of the European species. The dark shades are darker and look quite different in *Albovenosa*. I never saw any *Henrici* (and I have seen I should think a hundred) look like them. *Henrici* I took three or four of on Staten Island in 1881, and again two this year at light. Also one *Absidum*, which seems to me cannot be a mere variety. It differs less than many varieties, but it has more char-

acters. It is not unlikely then that Mr. Smith's Canadian correspondents, whose mistakes he has drawn attention to in the CANADIAN ENTOMOLOGIST, are really more correct in calling the species *Henrici*, but the genus *Ableokorna* must be withdrawn. I have found that my Canadian correspondents were always careful and well-informed, and I must say that, so far as the *Noctuidæ* are concerned, that there is more accurate knowledge generally distributed than in any of the other of the larger groups of moths.

SALIA RUFA, n. s.

Primaries brownish gray crossed by three oblique, yellowish, narrow lines. Inner line with a costal projection. The first discal dot is close to it. The middle line is a little waved and followed by a diffuse black shading, which obscures the outer discal dot. The outer line is a little bent at the middle and loses itself to apex. The subterminal field which follows is suffused with reddish brown and limited by a very fine irregular line; terminally the wing is again brownish gray and shows a faint festooned line; fringes paler, a little brownish. Hind wings fuscous gray with brownish fringes, beneath with black discal dot and outer line, the surface paler, irrorate. Arizona. Coll. B. Neumoegen, Esq. *Expanse* 22 mil.

Differs in color from our Eastern *S. Interpuncta* Grote, but of about the same size. *Madopa*, signifying "bald face," and not appropriate, is younger than Hübner's names, as stated by Zeller; and *Salia* is the oldest.

Twenty-five years ago, in my sixteenth year, I commenced the serious study of our nocturnal Lepidoptera. At that time probably not more than fifty kinds were named in any of our public or private collections. Now, of the one family *Noctuidæ*, alone, we have over sixteen hundred species recorded in our books. To my early letters requesting information for myself, I received no satisfactory replies; instead, boxes of specimens were sent to me to name. I am happy that some of my first correspondents still consult me, and that friendly relations exist between myself and almost all the students who have asked for my services.

NOTES ON THE EARLY STAGES OF XYLOTRECHUS ANNOSUS, SAY.

BY D. W. COQUILLETT.

In the month of April, 1880, I cut down a willow tree and cut it up into "sled-lengths," when no traces of borers could be seen. Early in March of the following year, while cutting this wood for the stove, I

found it to be infested with the larvæ of some species of longicorn beetle; I placed some of the sticks in one of my breeding cages where it remained undisturbed until the 7th of May following, when I found that nearly all the larvæ had assumed the pupa form. The next examination was made two weeks later, when nothing but perfect beetles were found. From this it would seem that this species requires only one year to complete its transformations.

I am indebted to Dr. Horn for determining the above species.

DESCRIPTIONS OF NEW SPECIES OF DIURNAL LEPIDOPTERA, FOUND IN BRITISH AMERICA AND THE UNITED STATES.

BY W. H. EDWARDS, COALBURGH, W. VA.

ARGYNNIS BUTLERI.

Allied to *A. Charicłea.*

Male.—Expands 1.4 inch.

Upper side dark fulvous, the base of primaries largely black, of secondaries still more, the black area extending to middle of disk, effacing all markings; the spots of both wings outside the basal area as in *Charicłea*, but the narrow spots on primaries are unusually large, with ragged edges, and the mesial band is heavy and diffused; on secondaries this band is lost in the black ground.

Under side of primaries nearly as in *Charicłea*, but there is scarcely any yellow at apex or along hind margin, all this area being deep red; a few yellow scales only at apex and in middle of the marginal interspaces, to represent the spots and patches of *Charicłea;* the submarginal lunules almost lost in the red ground.

Secondaries deep red, there being no yellow on the extra-discal area; the submarginal lunules and the rounded spots lost in the red ground or very obscurely indicated; the light band which limits the basal area is of same shape as in *Charicłea*, but is nearly covered with red, the long triangle at end of cell, and the rhomboid on costa, alone being white; from this band to base the color is intense red, with a few white scales in the interspaces at base; the macular silvery line around hind margin as in *Charicłea.*

Female.—Expands 1.5 inch.

Similar to the male, the basal areas black, but the spots still more diffused.

Under side as in the male, but there is a little more yellow at apex, and in the interspaces along hind margin are streaks of yellow. Secondaries intense red from base nearly to the rounded spots, and the edge there is fringed with clear white scales next costa, and white mixed with bluish or slate-colored on posterior half; these dark scales edge the nervules nearly to margin; the extra-discal area is same red, but over a yellow ground, the yellow no where distinctly appearing; the round spots and the submarginal lunules same red as the base; the silvery line as in male.

From 1 ♂ taken at Cape Thompson, North-west America, July 19, 1881, and 1 ♀ taken at Kotzebue Sound, July 14th, 1881, by Mr. E. W. Nelson, of the U. S. Signal Service.

These examples differing markedly from any Argynnis in my collection, I sent the male to Mr. A. G. Butler for determination. Mr. Butler replied: "It differs from *Chariclea* in the redder coloration, and much heavier markings on the upper surface; the basal area is blacker, the spots and stripes much thicker. Below, the markings are altogether darker than in *Chariclea* of Europe. Your example agrees perfectly with a specimen (in Br. Mus. Col.), labelled Nova Zembla, and with two of the Grinnell Land series, included under Mr. McLachlan's varieties of *Chariclea*. It is in my opinion worthy of a distinct name."

I take pleasure in naming the species after Mr. Butler.

ARGYNNIS EURYNOME Edw.

VAR. ERINNA.

Upper side in both sexes like the type form; on under side secondaries much covered with dark ferruginous, and sometimes even the belt between the outer rows of silver spots is more or less densely covered with same. In one ♀, except for a paler shade in the interspaces (but still ferruginous) on the area of this belt, the entire wing would be solid ferruginous, very little mottled with yellow buff on basal part of the disk. One male is nearly as dark. Others, of both sexes, are more or less mottled with yellow buff, and the belt is of that color, clear. There is an absence of green (olive) in all examples under view. If it were not that among these are some exactly like examples from Colorado, without green, I should consider the present as a distinct species. I have 12 ♂, 4 ♀ from

Spokane Falls, W. T., sent me by Rev. W. J. Holland, Pittsburgh, Pa.; and 1 ♂ taken in Colorado by Mr. Mead in 1871. Also I have a female nearer the Colorado type of *Eurynome*, by Mr. Morrison, at Mt. Hood, Oregon. This is very small, dull fulvous above; the belt spoken of dark yellow buff, the disk to base pale ferruginous, mottled with dull green. Two females from Big Horn, Mont., agree with this, but are large as the usual Colorado form.

PAMPHILA CARUS.

Male.—Expands 1.1 inch.

Upper side light brown, with a slight tint of yellow; primaries have two minute yellow white sub-apical spots on costa, two others directly below these in the two upper median interspaces, and an obscure spot at outer end of cell; the stigma a straight, slender black bar, extending from upper median nervule to sub-median. Secondaries have, on the disk, in line parallel to hind margin, a curved row of obscure and minute yellow-white spots on the upper half the wing; fringes dull white.

Under side of both wings brown; the costal margin of primaries and inner margins of both wings, dusted with yellow-white; so also the hind margins for a narrow space; all nervures and branches yellowish; primaries have the spots of upper side repeated, enlarged; there are now three costal spots, two at end of cell, two in median interspaces, and one in cell; on secondaries the row is distinct, all the spots enlarged, the line curving round outer angle; a large spot in cell.

Female.—Expands from 1.1 to 1.25 inch.

The upper side marked by an oblique row of white spots extending from upper discoidal nervule to inner margin; three costo sub-apical spots; one at end of cell; the spots on secondaries distinct.

From 1 male and 2 females received some years ago from the late Jacob Boll, and taken by him in West Texas. The species stands near *Rhesus* Edw., resembling it in size, general color of upper side and white fringes. But the male *Rhesus* has no stigma, the fringes are purer white, and there is considerable difference beneath, The presence of a stigma however is enough to enable one to distinguish *Carus* at sight.

PAMPHILA MILO.

Male.—Expands 1.2 inch.

Upper side bright red-fulvous, the hind margins of primaries pale brown nearly to cell; the stigma a black narrow ridge, nearly straight, bent

down a little towards outer end, edged on both sides by black scales; on costal margin three small translucent spots, and two next stigma on the two median interspaces; no black spot or patch beyond stigma towards apex. Secondaries have a narrow and darker brown margin, and all the disk and basal region is bright fulvous.

Under side of primaries pale ferruginous; the translucent spots repeated, not enlarged; a black mark indicating the outer end of stigma, and black next base. Secondaries paler ferruginous, the disk a shade lighter than the margin.

From 1 male, from Mt. Hood, Oregon. Near *Agricola* Bd.; same size; the fore wing less produced; stigma same shape, but there is no dark patch beyond it; the translucent spots are not found in *Agricola;* below paler colored, and no black at inner margin of primaries.

PAPHIA MORRISONII.

Male.—Expands 2.7 inches.

Primaries scarcely at all produced, the hind margin but little concave.

Upper side bright red, with no spots or marks, except that the arc of cell on primaries is narrowly edged on both sides by brown scales; apex and the edge only of hind margin dusted lightly with black. Secondaries have the costal margin whitish or hoary; the hind margin dusted with black and very scantily for about two tenths inch inward, scarcely obscuring the red ground; mixed with the black on the marginal edge, especially between the tail and inner angle, are dull gray scales; near the margin, a complete series of yellow points, one on each interspace; tail short, spatulate.

Under side gray-white, dusted thickly and quite evenly with pale black, though rather less on the marginal areas; the inner half of primaries red-tinted; primaries have no bands or spots; secondaries have a narrow nebulous stripe across the disk limiting the slightly darker area to base.

Body reddish above, thorax light gray-brown beneath, abdomen yellow-white; legs yellowish; palpi yellowish, with brown hairs at and near tip; antennæ brown, imperfectly annulated with gray; club black, tip ferruginous.

Female.—Expands 2.3 to 2.75 inches.

Primaries more produced, the apex ending in a sharp point.

Upper side dark red; costal margin of primaries narrowly edged with brown; apex of same wing and hind margins of both wings bordered with

pale black, more narrowly than in *P. Troglodyta;* preceding this is a band, sometimes of a paler red than the ground, sometimes of same shade, and only imperfectly indicated by the brown indistinctly defined line which limits its basal side; this band is shaped much as in *Troglodyta*, but comes considerably nearer to hind margin, thereby restricting the width of the dark border, and also of the dark apical area, and is less incurved on the median interspaces; on the arc of cell a narrow black crescent; on the outer half of secondaries is an obscure continuation of this band, which passes imperceptibly into the ground color; the yellow points are continued across both wings. Under side same shade as in the male, the basal and discal areas on primaries darker than the marginal.

From one male, from Western Texas, in the collection of Mr. B. Neumoegen, and 3 females, taken by Mr. Morrison, on Mt. Graham, Arizona. The male is brighter red than *Troglodyta* Fab. (*Glycerium* Edw., not Doubleday, *Andria* Scud.); the wings of purer color, with scarcely any black margins. In the example under view, the discal spot is brown and obscure, instead of black. The female has a marginal border not half the width of that of *Troglodyta*, and the obscure band, not always paler than or differing from the ground, follows more closely the margin. Both sexes have yellow dots in the interspaces near the margins on hind wings, and the female on fore wings also. The under side is gray-white, instead of a greasy gray-brown, and there is almost an entire absence of markings. I sent one of these females to Mr. A. G. Butler, together with one of the Illinois and Western species. Mr. Butler replied that there was nothing in the Museum collection like this Arizona example, nor did he know of anything of the kind having been described. I name it for Mr. Morrison, whose arduous labors have so greatly enriched the American collections.

With regard to the Illinois species, Mr. Butler pronounces it *Troglodyta* Fab., a conclusion to which I had myself come, after an examination of Cramer's figure of *Astinax*, last fall in Philadelphia, at the Academy. It seemed to me that the figures of Cramer were unmistakable. The synonymy of the species then is:

P. TROGLODYTA Fab., Syst. Ent., 502, 1775.
Astinax Cramer, iv., 337, f. A. B., 1782.
Glycerium Edw. (not Doubl.), But. N. A., Vol. 1.
Andria Scud., Bull. Buff. Soc., 11, 248, 1875.

ENTOMOLOGICAL NOTES FOR 1882.

BY PROF. E. W. CLAYPOLE.

My removal from Yellow Springs, Ohio, to New Bloomfield, Pennsylvania, has had the effect of breaking off the line of my entomological work, or at least throwing it into a rather different channel. Among the first results is a notice of the striking difference, between the two places in regard to insect depredations. In my experience last year a great part of the time was occupied with fighting insects. The cherry weevil, the potato worm and beetle and the apple worm were the ringleaders; but after them came the blister beetles, the turnip flea, the corn worm, the squash bug, *et multa alea*. Here, at least during the present, or rather past season, the ravages of all these have been quite insignificant. Foremost stands the potato beetle. As soon as the young plants came up I followed my usual plan of picking them off and dropping them into a tin having a few spoonfuls of coal oil at the bottom. By this means they cause no trouble in crawling out again. Though the season was rainy, and therefore the opposite of the last, yet I found two applications of the poison dust (1 part of London purple and 60 parts of wood ashes) quite sufficient to keep the plants free from the young grubs. I am inclined, however, to recommend the use of plaster instead of ashes in a wet season. It seems to adhere better to the leaves when rain falls on them.

To my surprise there was here no second brood of the beetles this year. A few belated individuals appeared, but nothing that deserved the name of a brood. Of course the earliest potatoes were ripe before the usual second emergence, but the late ones grew and were green almost till frost came, but were perfectly uninjured after the beginning of July. I cannot learn if this is usual, for I can find no one who has been sufficiently observant, or who is sufficiently acquainted with the habits of insects in general, and with those of *Doryphora 10-lineata* in particular, to tell me. They come, they are here, they go, but when, why and how they come and go is a matter which no one here seems to have considered. Another year I shall try and make more general observations on this point.

Not only is the potato beetle less mischievous here than it was in Ohio, but all the others named follow suit. The apples are much less infested with worms; blister beetles I have scarcely noticed; corn worms are quite innocuous, and as for the cherry weevil, though the crop this year was not heavy for all kinds of cherries, and the fruit should, therefore, be at its

worst, I have not seen a score of them all through the summer. I noticed one or two on my own trees showing the crescent cut, but no more. It was almost as safe to eat the fruit unexamined, as it is in England.

By the way, I never hear any apprehension expressed concerning the migration of *Conotrachelus nenuphar* across the Atlantic. Though fruit is less abundant there than here, yet the introduction of this pest would be a very serious drawback to the enjoyment of plums, peaches and cherries, not to mention the loss caused by its attacks on the apple.

On the other hand, if these insects are less injurious in Pennsylvania than in Ohio, the imported currant worm is more so, and the growth of currants is greatly limited by its ravages. Very few persons seem to know what can be done by the use of poison to rescue the bushes and the currants. Great, but totally unfounded prejudice also exists against the use of poison, even on potatoes; many people seeming to fear lest the potato should absorb sufficient arsenic to render its use as a table vegetable dangerous. It is needless to say that all such ground of alarm has long been set at rest in the minds of those who have followed the progress of economic entomology. But prejudice is blind to reason and slow to die away.

In addition to this the various web-worms on the forest trees are vastly more numerous here than they were at Yellow Springs. In earliest spring and before the leaves are generally out, the American Lackey Moth *(C. Americana)* takes possession of the cherry trees and covers the young foliage with its net. Soon afterwards the Forest Lackey *(C. sylvatica)* follows on the same tree, but more frequently on the apple, and later still the walnuts are attacked by the Fall web worm *(H. textor)*, whose nests remaining on the trees after the fall of the leaf, disfigure them through the winter.

This year, also, the oak caterpillar *(D. senatoria)* has wrought great ravages in the forest. I have seen hillsides that looked as if fire had passed over them in consequence of the destruction of the foliage by millions of this species. In the woods they could be found crawling over almost every square foot of ground and lying dead by dozens in every pool of water. The sound of their falling frass, too, was like a slight shower of rain. Farmers tell me they have never known them so abundant before within their recollection. Harris says this species lives on the White and Red Oaks *(Q. alba and rubra)* in Massachusetts. Here the White Oaks were untouched, and the Red Oak is not abundant. The food of the caterpillars was almost exclusively the foliage of the Black Oak *(Q. tinctoria)*, the Scarlet Oak *(Q. coccinea)*, and the Bear or Scrub Oak *(Q. ilicifolia.)*

CORRESPONDENCE.

DIPTEROUS ENEMIES OF THE PHYLLOXERA VASTATRIX.

To the Editor: Will you permit me to refer briefly to the Rev. T. W. Fyles's description of *Diplosis grassator*, on p. 238, vol. xiv. I am credited with the reference of the insect to the genus *Diplosis*, though in reality I have never seen Mr. Fyles's insect, whether in the larva, pupa or imago state. I simply expressed the opinion at Montreal, both to yourself, Mr. Editor, and to Mr. Fyles, that the insect would prove to be a *Diplosis*, from the general account of the larva then and there given to me. It is rather unjust to quote another's mere opinion given in this manner, when, by submitting specimens for examination, a definite and more authoritative decision could have been obtained.* In this case the reference seems to be correct, a fact which, under the circumstances, is a mere accident.

I need hardly say that there is nothing in the description that is not of so general a nature as to be at most generic, so that we have no evidence whatever as to whether the species is new or by what characters it is to be distinguished from the hitherto described species of the genus.

But my object in writing is to point out the fact that there are two different orange-colored Dipterous larvæ that attack the gall-inhabiting form of *Phylloxera vastatrix* in all its stages of growth, and particularly in the egg state. Neither of them is parasitic, strictly speaking, but merely predaceous, not only on *Phylloxera vastatrix*, but on other gall-making Phylloxerians and Pemphigians. First, we have the pale-orange or salmon-colored Diplosis larva referred to by Mr. Fyles, with the usual breast-bone of the Cecidomyidæ, and with the pupa showing the antennal processes at the anterior end. Second, a deeper orange larva contracting to a brown pupa with two oblique processes from the anal end, and producing a fly of a totally different family (Agromyzidæ) belonging to the genus *Leucopis*. This is by far the most efficient of the two enemies, and the larvæ have undoubtedly been at times confounded, as witness the differences between Walsh and Shimer (*Practical Entomologist*, ii., p. 19). The *Leucopis*, so far as I have investigated the matter, is undescribed and is referred to in my manuscript notes as *L. phylloxeræ*.

C. V. RILEY, Washington, D. C.

* The Editor is solely responsible for this reference to Prof. Riley; Mr. Fyles knew nothing of it until he saw it in print. The opinion given in Montreal as to the generic position of this insect was so unhesitating and positive in its character that we thought it not only safe but due to Prof. Riley to credit him with the determination.

Ottawa, Dec. 14, 1882.

My Dear Sir: In the last ENTOMOLOGIST, at page 198, Mr. Fyles contributed a note on a gall mite of the Nettle tree. The insect referred to is undoubtedly Prof. Riley's *Psylla celtidis-mamma*, of which I exhibited the galls and pupæ at the last Annual Meeting of the Society, and of which I have already sent you an account in a paper on "The Cicadæ and their Allies," for the Annual Report. I notice that Mr. Fyles found his galls to be monothalamous, and this agrees with Prof. Riley's description. I have found, however, in examining a large number of specimens, that many contained 2, 3, and in one case even 4 pupæ. The occurrence of *Celtis occidentalis* at Cowansville is very interesting from a botanical point of view. In this locality it is very uncommon, although from its resemblance to the Elm, it has probably been frequently overlooked. It grows to the size of a small tree from 30 to 40 feet in height, with a diameter of from 12 to 18 inches. In Western Canada I believe it is a common tree, and I should be glad to learn whether it is there attacked by this Psylla to the same extent it is here. In some of the galls I examined I found the larvæ of apparently two different species of parasitic Hymenoptera.

J. FLETCHER, Ottawa, Ont.

Editor Can. Ent.—Dear Sir: I am sure your readers were pleased at your printing the pretty lines on a winter butterfly, which Mr. Fletcher took the trouble to send. (See p. 219, vol. xiv.) I remember very many years ago, in January, finding a hibernating *Vanessa Antiopa* in the garret of our Staten Island farm house. It hung from a rafter and seemed almost dead. I placed it on a brick flue, which was hardly warm, but it did not revive at the time. Some few days after, the weather having become milder, I searched for it and found it where I had laid it, still on its side, with the legs drawn in. But on touching it, the wings suddenly unclosed, the insect took to flight, and, the window being open, it escaped into the winter sunshine. Some years after I found three or four specimens of *Pyrameis Atalanta* under the same circumstances, all close together, hanging to a rough rafter and perfectly torpid. On being placed in a warm room they revived in a short time and I allowed them to escape. As early as warm February days I have met the Camberwell Beauty and Admiral, in solitary state, on the wing. The south side of Staten Island soon gets warmed by the Spring sun, and is a good collecting field for the entomologist.

A. R. GROTE.

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